MEMO

TO: Health Care Providers

FROM: Rachel Birk, TB Coordinator
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RE: Updated guidelines for the use of *Mycobacterium tuberculosis* Nucleic Acid Amplified Tests

DATE: May, 2009

The Centers for Disease Control and Prevention (CDC) published **Updated Guidelines for the Use of Nucleic Acid Amplification Tests in the Diagnosis of Tuberculosis** in the January 16, 2009 issue of *Morbidity and Mortality Weekly Report*. A summary of these guidelines is provided in the 2009 – 2011 Directory of Services for the North Dakota Public Health Laboratory (NDPHL), which may be accessed online at www.ndhealth.gov/microlab.

Nucleic Acid Amplification (NAA) tests include the Amplified *Mycobacterium tuberculosis* Direct Test (MTD, Gen-Probe), which is available through the NDPHL. This test is performed on an as-needed basis at the request of the ordering physician at no cost to the patient. This test should be performed only when there is strong clinical suspicion of active pulmonary tuberculosis. The MTD test must be performed in conjunction with mycobacterial culture. Respiratory specimens, including sputum, bronchial specimens and tracheal aspirates, are acceptable for MTD testing; however, those that are grossly bloody will not be tested. Specimen collection kits may be ordered from the NDPHL online at www.ndhealth.gov/microlab or by faxing a completed order form to 701.328.6280.

The following are guidelines for interpreting the results of NAA tests in conjunction with Acid Fast Bacteria (AFB) smear results:

1. **If the NAA result is positive and the AFB smear result is positive**, presume the patient has TB and begin anti-TB treatment while awaiting culture results. The positive predictive value of FDA approved NAA tests for TB is higher than 95% in AFB smear-positive cases.
2. **If the NAA result is positive and the AFB smear result is negative**, use clinical judgment whether to begin anti-TB treatment while awaiting culture results and determine if additional diagnostic testing is needed. Consider testing an additional

specimen using NAA to confirm the NAA result. A patient can be presumed to have TB, pending culture results, if two or more specimens are NAA positive.

3. **If the NAA result is negative and the AFB smear result is positive**, a test for inhibitors should be performed and an additional specimen should be tested with NAA. Sputum specimens (3%-7%) might contain inhibitors that prevent or reduce amplification and cause false-negative NAA results.
    a. **If inhibitors are detected**, the NAA test is of no diagnostic help for this specimen. Use clinical judgment to determine whether to begin anti-TB treatment while awaiting results of culture and additional diagnostic testing.
    b. **If inhibitors are not detected**, use clinical judgment to determine whether to begin anti-TB treatment while awaiting culture results and determine if additional diagnostic testing is needed. A patient can be presumed to have an infection with nontuberculous mycobacteria if a second specimen is smear positive and NAA negative and has no inhibitors detected.
4. **If the NAA result is negative and the AFB smear result is negative**, use clinical judgment to determine whether to begin anti-TB treatment while awaiting results of culture and additional diagnostic tests. Currently available NAA tests are not sufficiently sensitive (detecting 50%-80% of AFB smear-negative, culture-positive pulmonary TB cases) to exclude the diagnosis of TB in AFB smear-negative patients suspected to have TB.

Culture remains the gold standard for laboratory confirmation of TB and is required for isolating bacteria for drug-susceptibility testing and genotyping. Although NAA testing is recommended to aid in the initial diagnosis of persons suspected to have TB, the currently available NAA tests should not be ordered routinely when the clinical suspicion of TB is low, because the positive predictive value of the NAA test is less than 50% for such cases. Clinicians should interpret all laboratory results on the basis of the clinical situation. A single negative NAA test result should not be used as a definitive result to exclude TB, especially when the clinical suspicion of TB is moderate to high.

For more information on TB, visit the TB program website at http://www.health.state.nd.us/disease/tb/ or call 800.472.2180 or 701.328.2378. For more information on North Dakota Public Health Laboratory microbiological services, visit www.ndhealth.gov/microlab or call 701.328.6272.

RB/rjj

cc: Kirby Kruger, Division of Disease Control Director
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